EEM # _____

INSTRUCTIONS

HPM-501 SERIES

WIDEBAND WATTMETER

ELECTRONIC DESIGN • DEVELOPMENT • MANUFACTURING

BELL INC.
COLUMBUS, OHIO

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MFG. _____
MODEL _____
EEM # _____

INSTRUCTIONS

HPM-501 SERIES

WIDEBAND WATTMETER

HPM-501 series wattmeters are designed to measure single phase power in the frequency ranges 40 to 4000 Hz and 0.5 to 50 kHz. Power computation is performed by a Hall-effect transducer. The transducer output voltage, instantaneously proportional to power, is available at the output terminals for waveform display on an oscilloscope or for remote power level indication or recording. The output is also indicated as average true power on a 3½" mirror scale panel meter.

Specifications

Input Characteristics

High frequency range	0.5 to 50 kHz
Low frequency range	40 to 4000 Hz
Voltage ranges	See next page
overload	1.25 x ratings
burden	<1 VA
Current ranges	See next page
overload	1.25 x ratings
burden	See next page
Dielectric test, between circuits and to case ground	1500 V rms

Output Characteristics

Full scale power ranges	See next page
Indicating accuracy	2 % FS
Output across 10 kΩ	10 mV dc FS
	20 mV p-p FS
accuracy and linearity	≤±1 % FS
response	<1 ms
Output influences,	
frequency, each range	≤±2 %
voltage, each range	≤±1 %
power factor, 1 to zero, lead or lag	≤±0.02 W per VA
temperature, 0° C to 50° C	<-0.2 % per °C

Operating Power

The small amount of power required to operate the instrument is drawn from the circuit on which the power measurement is made.

Calibration

The instrument is factory calibrated, in horizontal position, at 1 kHz in the high frequency range and at 60 Hz in the low frequency range. Recessed panel controls permit independent recalibration at any frequency in each of the two frequency ranges. Calibration will be performed at other frequencies on special order.

Packaging

The instrument is housed in a 6¼ x 9¼ x 4¼ steel case with handle and detachable cover. Weight 7 lb.

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WIDEBAND WATTMETER

MODELS AND RANGES

Ranges	Standard HPM-501	Modifications HPM-501A	HPM-501B	HPM-501C	HPM-501D	HPM-501E
Voltage, low	100 V	100 V	100 V	100 V	100 V	100 V
high	300 V	300 V	300 V	300 V	300 V	300 V
Current, low	1 A	3 A	1 A	1 A	3 A	5 A
high	10 A	10 A	2 A	3 A	30 A	10 A
FS Power	100 W	300 W	100 W	100 W	300 W	500 W
	300 W	900 W	200 W	300 W	900 W	1000 W
	1000 W	1000 W	300 W	300 W	3000 W	1500 W
	3000 W	3000 W	600 W	900 W	9000 W	3000 W
Current Burden at 1 kHz	<0.5 VA	<0.5 VA	<0.5 VA	<0.5 VA	<1.0 VA	<0.5 VA

OPERATING INSTRUCTIONS

Do not operate at fundamental frequencies outside the Low Frequency range (40 Hz to 4000 Hz) or outside the High Frequency range (0.5 kHz to 50 kHz).

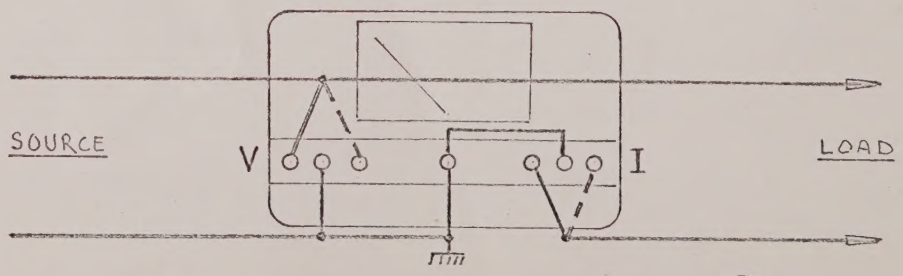
Do not operate at voltage and current levels higher than 25% in excess of the ratings. Do not operate at current-circuit potentials in excess of 600 V above ground.

Fuse protection 300 V input (yellow): BUSS AGC 1/100 A
Fuse protection 100 V input (red) : BUSS AGC 1/32 A

Do not use Slow-Blow fuses

Instruments connected to the output terminals must have an input impedance of at least 10 kΩ. Either output terminal may be grounded. The reverse switch reverses the output polarity and the meter deflection.

This instrument is calibrated in horizontal position at 60 Hz in the Low Freq. range and at /kHz in the High Freq. range, connected as shown below.



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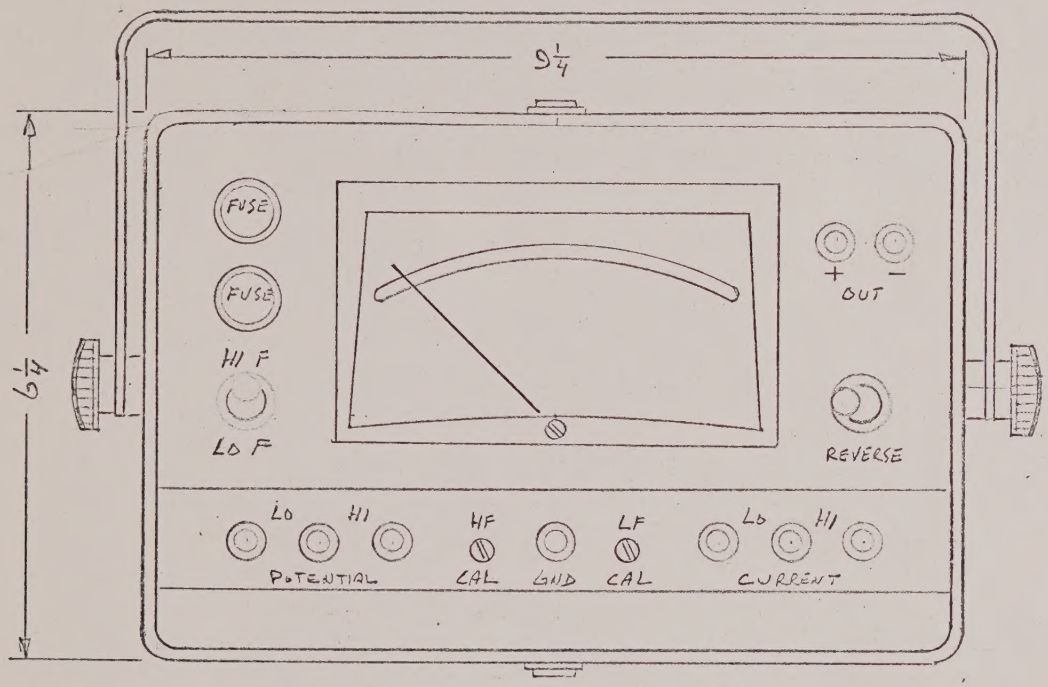
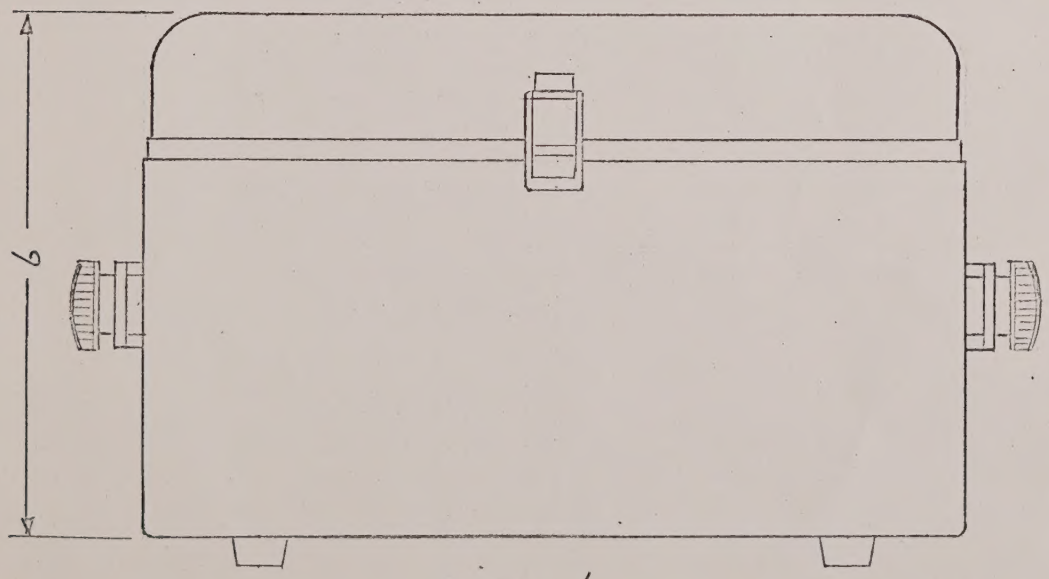


TOPVIEW – COVER REMOVED



SIDEVIEW

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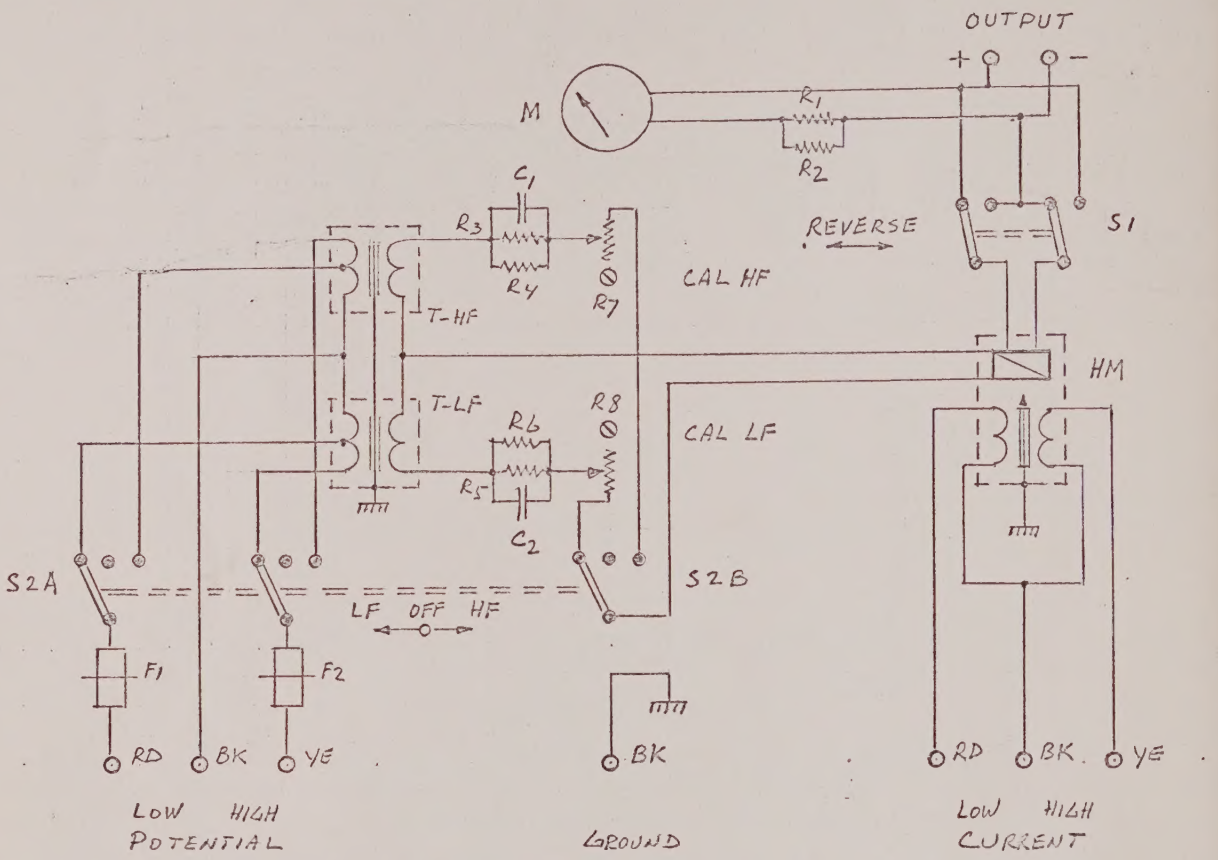
WIDEBAND WATTMETER



SCHEMATIC HPM-501 SERIES

C_1	SELECT
C_2	SELECT
F_1	1/32 A 3AG
F_2	1/100 A 3AG
HM	SPECIAL HALL-PAK MULTIPLIER
M	METER 9.5 mV dc FS
R_1	4.3 Ω
R_2	SELECT
R_3, R_5	56 Ω
R_4, R_6	SELECT
R_7, R_8	5 Ω CAL. POT RB 477-002
S_1	DPDT TOGGLE
S_2	3PDT TOGGLE WITH CENTER POS.
T-HF	SPECIAL HIGH FREQ XFO.
T-LF	SPECIAL LOW FREQ XFO.

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